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An overview of broad-band access technologies

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Ecole Nat. Supérieure des Telecommun., Paris;

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Abstract:

The provision of broad-band services based on either the Internet or the asynchronous transfer mode (ATM) technique requires a new generation of access networks. In the short term, solutions such as x-digital subscriber line (DSL) and hybrid fiber coaxial (HFC), allowing the reuse of existing infrastructures look very promising. For the longer term, new infrastructures based either on radio or on optical access links seem preferable. Three x-DSL techniques aiming at high-bit-rate transmission over twisted pairs are presented: high-bit-rate DSL, asymmetrical DSL, and very-high-bit-rate DSL. An extension of existing cable television networks known as HFC is also described. Two other prospective approaches, wireless in the loop (WITL) and fiber in the loop (FITL), are then presented. Several techniques are considered for WITL: digital enhanced cordless telecommunication local multipoint distribution service, wireless ATM, and low Earth orbit satellite constellations. The various architectural alternatives for the FITL approach are discussed, a special interest being dedicated to the synchronous digital hierarchy self-healing loop and the ATM over a passive optical network. We mention the main experiments and the standardization activities inherent to the domain

Index Terms:

Internet asynchronous transfer mode broadband networks cable television cordless telephone systems digital communication optical fibre subscriber loops radio links reviews satellite communication subscriber loops synchronous digital hierarchy twisted pair cables DECT FITL Internet LMDS WITL asymmetrical DSL asynchronous transfer mode technique broad-band access cable television networks digital enhanced cordless telecommunication local multipoint distribution service fiber in the loop high-bit-rate DSL high-bit-rate transmission hybrid fiber coaxial system infrastructures low Earth orbit satellite constellations optical access links overview passive optical network radio access links synchronous digital hierarchy self-healing loop twisted pairs very-high-bit-rate DSL wireless ATM wireless in the loop x-DSL x-digital subscriber line

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